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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,701

07/09/2007

Dietmar Lerche

1033415-000002

2957

21839 7590 10/07/2008  
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EXAMINER

HENSON, MISCHITA L

ART UNIT

PAPER NUMBER

2857

NOTIFICATION DATE

DELIVERY MODE

10/07/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/591,701	<b>Applicant(s)</b> LERCHE ET AL.	
	<b>Examiner</b> Mi'schita' Henson	<b>Art Unit</b> 2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Specification***

1. The abstract of the disclosure is objected to because its length exceeds 150 words. Correction is required. See MPEP § 608.01(b).

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

2. The disclosure is objected to under 37 CFR 1.77(b) because it does not contain the proper arrangement for a specification. For example, sections (f) and (g), as indicated below, are missing and sections (h) and (i) lack appropriate headings. Correction is required.

### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.

- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

### ***Claim Objections***

3. Claim 1 is objected to because of the following informalities:

line 16 of claim 1 recites the limitation "chemistry properties.", it should be --chemistry properties-- (intermediate periods should be removed as they are only permitted at the end of a claim)

line 19 of claim 1 recites the limitation "position and time.", it should be --position and time--

line 22 of claim 1 recites the limitation "extinction values.", it should be --extinction values--

line 25 of claim 1 recites the limitation "droplet size.", it should be --droplet size--

line 28 of claim 1 recites the limitation "for this profile.", it should be --for this profile-- and

line 31 of claim 1 recites the limitation "concentration relationship.", it should be --  
concentration relationship--

Correction is required.

4. Claims 1-10 are objected to because of the following informalities:

the language of the claim is non standard and awkward. The claim is not written to recite positive and active steps. For example, --calculated-- instead of "calculating", --determined-- instead of "determining" and --computed-- instead of "computing". See 37 CFR 1.75 and MPEP 608.01(i)-(p). Correction is required.

5. Claim 16 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 16 recites the limitation "has a multi-sample receptacle unit, which makes possible the acceptance of samples placed vertically" which is interpreted to be the same as the limitation recitation in claim 11 "a PC-controlled multi-sample receptacle unit arranged vertically".

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the phrase "for example" in lines 2 and 77 of the claim renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Further, claim 1 contains references to Equations A-G and Equation E\*. These equations are not defined in the claim. Further still, lines 39, 41, 46-47, 56-58 and 71 of claim 1 contain references to steps 1.2, 1.8.1-1.8.3, 1.6 and 1.11. These steps are not defined in the claim. Even further still, the limitations in parenthesis (lines 2-4, 20-21, 60-61 and 76) may lead to confusion over the intended scope of the claim; it is not clear whether the limitations in parenthesis are in fact a limitation; therefore, the claim is indefinite because the intended scope of the claim is unclear.

Regarding claim 3, the limitations in parenthesis (line 4) may lead to confusion over the intended scope of the claim; it is not clear whether the limitations in parenthesis are in fact a limitation; therefore, the claim is indefinite because the intended scope of the claim is unclear.

Regarding claim 11, the phrase "for example" in line 2 of the claim renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Further, the limitations in parenthesis (lines 2-4) may lead to confusion over the intended scope of the claim; it is not clear whether the limitations in parenthesis are in fact a limitation; therefore, the claim is indefinite because the intended scope of the claim is unclear.

Regarding claim 14, claim 14 recites the limitations "the measurement range" and "the measurements" in lines 2-3 of the claim. There is insufficient antecedent basis for these limitations in the claim.

Claims 2, 4-10, 12-13 and 15-16 inherit the limitations of the claims from which they depend.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Allen in US Patent 5,095,451 (as is best understood).

Regarding claim 1, Allen teaches:

Method for the automatic determination of selected physical, technical method and colloidal chemistry parameters (for example, the grain size, the distribution of grain sizes, the speed distribution, the particle flux, the hindrance function and indices of structural stability) by means of the determination of the attenuation of radiated waves during the segregation of monodisperse or polydisperse dispersion samples subjected to gravitation or centrifugation, characterised by the following features (see Abstract):

during the segregation by means of centrifugation or gravitation, the momentary transmission  $I_T(t, r)$  characterising the current segregation status of the waves radiated with the intensity  $I_o(t, r)$  and/or the instantaneous scattering  $I_s(t, r)$  as a function of the

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position within the samples is repeatedly determined and recorded at high resolution at any arbitrary time for one or more wavelengths over the entire length of the sample or in selected partial sections of it, simultaneously for multiple and even concentrated samples with known and/or unknown physical and colloidal chemistry properties (see for example “subjected to centrifugal force”, Abstract; see “gravitational or centrifugal force”, column 1 lines 14-29; column 2 lines 42-59; and see for example “intensity of a beam”, column 3 lines 4-18).

the extinction profile  $E_T(t, r)$  is calculated by finding the log of the ratio of  $I_o(t, r) / I_T(t, r)$  for the determination of the particle or droplet concentration for the tested dispersion samples as a function of sample position and time (see “a beam of radiation from a radiation source”, “generating radiation transmission data” and radiation density  $Q$ , column 3 line 45- column 4 line 30; see also column 6 line 63- column 7 line 5).

from these extinction profiles  $E_T(t, r)$  determined at different times ( $t_1 \dots t_n$ ) and the local adjustment made in these time segments ( $t(n-1) - t(n)$ ), segregation speeds are calculated for any constant extinction values (“radiation detector continually generating radiation transmission data” is interpreted to be determined at different times and the local adjustment made in these time segments, column 3 lines 45-56).

from the ratio of the segregation speeds determined for specific extinction percentiles, a polydispersity index is calculated, which is characteristic for the polydispersity of the density or the particle or droplet size (see particle size and  $D_m$ , column 3 line 60 - column 4 line 3 and column 4 lines 54-61).



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extinction-weighted distributions of the grain size are calculated from extinction profiles  $E_T(t, r)$  for selectable times according to Equation A while standardising on the maximum extinction for this profile (see particle size distribution and  $F(D_m)$ , column 4 lines 30-61).

the local and temporal change of the particle or droplet concentration can be determined by taking into account the substance-specific extinction concentration relationship (see particle size, particle size distribution,  $D_m$  and  $F(D_m)$ , column 3 line 57 - column 4 line 61).

the substance-specific extinction-concentration relationship is calculated through the simultaneous segregation of samples of the substance system to be measured with known, varying volume concentrations, whereby the concentration effect on the extinction is calculated while taking into account the repeated scattering (see Abstract, column 1 lines 5-29, column 2 lines 43-55; see “measured at at least two different positions”, column 3 lines 21-26), for example according to Equation B

and/or

the volume-weighted distributions of the grain size are calculated according to Equations A and C from any extinction profiles acquired at time  $t$  (see “radially scanning a suspension...continually generating radiation transmission data (i.e. profiles acquired at time  $t$ ), column 3 lines 45-60) according to 1.2, whereby

the volume-specific extinction cross section that is dependent on particle size and that is required for doing so is calculated according to Mie while including the device constants from the known optical substance parameters, or

as an alternative to 1.8.1, the method allows the experimental determination of the volume-specific extinction cross section that is dependent on particle size if the extinction of at least two monodisperse reference samples is determined corresponding to 1.2, or

as an alternative to 1.8.1, the method allows the experimental determination of the volume-specific extinction cross section that is dependent on particle size if the course of the extinction is determined during the segregation of at least one polydisperse substance system with similar optical characteristics corresponding (see particle diameter, column 4 lines 38-50 and optical radiation, column 5 lines 26-38) to 1.2

and/or

using the volume-weighted distribution of particle sizes determined in 1.8, the particle size dependency for the volume-specific extinction cross section determined in 1.8.1 - 1.8.3, and the concentration-dependent extinction determined in item 1.6, each radial position and the particle size associated with it via Equation A is assigned a volume concentration corresponding to Equation D

and/or

the flux density function standardised to the centrifugation constant ( Equation F) is determined from the change in the concentration of the samples with known starting concentration

and/or

the concentration-dependent hindrance function for the substance system is determined corresponding to Equations E,  $E^*$  and F

and/or

the volume-weighted distribution of the Stokes equivalent diameter for the case of hindrance functions not equal to 1 is determined by iteratively repeating Equation G instead of Equation A for the steps described in 1.2 through 1.11 until the difference between the concentration profiles of consecutive steps are less than a value to be provided in advance, or if the allowance for the hydrodynamic impediment (Equation E) is provided by means of another suitable mathematical algorithm, for example via the definition of a cost function.

Regarding claim 4, Allen teaches:

Method according to claim 1, wherein the apparent relative viscosity can be calculated as a function of the concentration by volume from the hindrance function taking into account the concentration by volume (see hindered settling, concentrations and viscosity, column 5 lines 25-66).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2, 11 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen in US Patent 5,095,451 (as is best understood).

Regarding claim 2, Allen teaches the limitations of claim 1 as indicated above.

Further, Allen teaches:

Method according to claim 1, wherein the determination of the grain sizes and their distribution is possible for dispersed particles with density both greater as well as less than that of the dispersion medium (suspension liquid is selected so as to be less dense than the particles to be analyzed is interpreted to be dispersed particles with density greater than that of the dispersion medium, column 5 lines 10-16). Allen differs from the claimed invention in that it does not necessarily teach dispersed particles with density less than that of the dispersion medium. One of ordinary skill in the art would have understood that selecting the dispersion medium could have been selected so as to be denser than the particles to be analyzed to be a matter of design choice.

Regarding claim 11, Allen teaches:

Device for the automatic determination of selected physical, technical method and colloidal chemistry parameters (for example, the grain size, the distribution of grain sizes, the speed distribution, the particle flux, the hindrance function and indices of structural stability) (see Abstract), consisting of a PC-controlled (see computer and CPU, column 1 lines 45-48, column 2 lines 64-65 and Fig. 5) multi-sample receptacle unit arranged vertically or horizontally with a spectrometric measurement device with a source producing monochromatic parallel radiation (see tank, horizontally and vertically, column 8 line 65 - column 9 line 10 and Figs. 1 and 4), which registers (measures is

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interpreted to be registers), digitises (see sampling intervals, column 11 lines 35-36, column 12 lines 16-18) and stores (see memory, column 1 lines 45-48) the radiation intensity scattered or transmitted (see “read intensity output from the detector, column 11 lines 36-37) by the respective dispersion sample over the entire length of the sample simultaneously or shifted temporally during the segregation, resolved for location and time (see time and radial position, column 6 lines 63-68).

Allen differs from the claimed invention in that it does not necessarily teach multi-sample receptacle unit. One of ordinary skill in the art would have understood that the sample receptacle could be a multi-sample or a uni-sample unit.

Regarding claim 15, Allen teaches the limitations of claim 11 as indicated above. Further, Allen teaches:

Device according to claim 11 wherein the multi-sample receptacle unit is designed as a rotor (see “is capable of being rotated in order to induce a centrifugal force field, column 2 lines 60-62), and is driven by a motor (see motor, column 8 lines 50-53 and Fig. 2; see also stepper motor, column 12 line 31) with programmable variable and/or constant revolutions.

Regarding claim 16, Allen teaches the limitations of claim 11 as indicated above. Further, Allen teaches:

Device according to claim 11, has a multi-sample receptacle unit, which makes possible the acceptance of samples placed vertically for segregation in the gravitational field (see tank, horizontally and vertically, column 8 line 65 - column 9 line 10 and Figs. 1 and 4).

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9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Allen in US Patent 5,095,451 as applied to claim 1 above, in view of Tomimasu et al. in US Patent 4,975,578 (as is best understood).

Regarding claim 7, Allen teaches the limitations of claim 1 as indicated above. Allen differs from the claimed invention in that it does not necessarily teach the mass density distribution of a sample is calculated from the extinction profile.

Tomimasu et al. teaches determining the distribution of mass density of a sample via irradiating it with a burst of electron beams, wherein the attenuated intensity of the electron beams is detected by a detector and converted into mass density information (Abstract, column 2 lines 37-52 & 61-64, column 3 lines 59-67, column 4 lines 20-23). One of ordinary skill in the art would have understood that the intensity and transmission rate of the electron beams (i.e. extinction profile) is considered when determining the mass density distribution.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the teachings of Tomimasu et al. with Allen because Tomimasu et al. teaches a method and apparatus for measuring the distribution of mass density of materials using electron beams (column 1 lines 6-11) that provides "accurate, objective measurements at a relatively low cost" (column 3 lines 19-21).

10. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Allen in US Patent 5,095,451 as applied to claim 1 above, in view of Lerche et al. in US Publication 2002/0147563 (as is best understood).

Regarding claim 10, Allen teaches the limitations of claim 1 as indicated above.

Further, Allen teaches:

Method according to claim 1, wherein the control of the segregation analyser and the measurement sensor, including radiation source, sample management and data transfer, data handling and data storage, as well as all steps of analysis and the documentation of the results (see Abstract; see CPU, column 1 lines 45-48; see analysis and software program, column 13 lines 38-59), takes place by means of software supported by a database.

Allen differs from the claimed invention in that it does not necessarily teach a database. Lerche et al. teaches a database (see database, [0028] and Fig. 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the teachings of Lerche et al. with Allen because Lerche et al. teaches a method and device for direct estimation/identification of separation processes of disperse material systems ([0002]) using database, thereby improving the functionality of the system.

11. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Allen in US Patent 5,095,451 as applied to claim 11 above, in view of Lerche et al. in US Publication 2002/0147563 and Wood et al. in US Patent 3,344,702 (as is best understood).

Regarding claim 12, Allen teaches the limitations of claim 11 as indicated above. Allen differs from the claimed invention in that it does not necessarily teach different cuvettes matched to the measurement task, cuvette type detected automatically or a

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database. Lerche et al. teaches a database (see database, [0028] and Fig. 3). Wood et al. teaches a cuvette positioning device with plurality of cuvettes wherein the positioning can be programmed and a detecting device (a cuvette positioning device is interpreted to be a devices that matches the cuvettes to the measurement task, detecting device is interpreted to detect the cuvette type, column 2 lines 10-20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the teachings of Lerche et al. and Wood et al. with Allen because Lerche et al. teaches a method and device for direct estimation/identification of separation processes of disperse material systems ([0002]) using database and Wood et al. teaches an apparatus [utilizing cuvettes] for measuring the absorbance of light in a multiplicity of sample of substances (column 1 lines 18-23), thereby improving the functionality of the system.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mi'schita' Henson whose telephone number is (571) 270-3944. The examiner can normally be reached on Monday - Thursday 7:30 a.m. - 4:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eliseo Ramos-Feliciano can be reached on (571) 272-7925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

09/30/08  
/Mi'schita' Henson/  
Examiner, Art Unit 2857

/Eliseo Ramos-Feliciano/  
Supervisory Patent Examiner, Art Unit 2857